

preoperative mental health compared to dissatisfied patients (79.6% versus 57.1%). Patients whom received a knee arthroplasty were more often dissatisfied (satisfied 44.9% knee patients versus dissatisfied 73.3%). Postoperatively, patients who were satisfied six months after surgery experienced less pain (0.1 VAS pain versus 4.8), less stiffness (20.4 WOMAC stiffness versus 40.8), had more often a high postoperative mental health (95.8% versus 53.6%), and had more often fulfilled expectations (85.7% versus 23.3%). Dissatisfied patients performed as well as satisfied patients regarding objectively measured functioning. In other words, the capacity of patients (what patients can do) and the actual level of physical activity in normal daily life (what patients really do) had no influence on patient satisfaction.

Conclusions: The results of our study suggest that it is useful to measure self-reported mental functioning preoperatively. Special attention should be paid to patients with a poor self-reported mental functioning. Furthermore, patients should be extensively and realistically informed about the expected results of hip or knee replacement.

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EARLY POST-OPERATIVE MEASURES PREDICT ONE AND TWO YEAR OUTCOMES AFTER UNILATERAL TOTAL KNEE ARTHROPLASTY: THE IMPORTANCE OF CONTRALATERAL LIMB STRENGTH

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Purpose: Total knee arthroplasty (TKA) has been shown to be an effective surgical intervention for persons with end-stage knee osteoarthritis. Despite this, recovery of function is variable and not all individuals have successful outcomes. The aim of this study was to discern which short-term post-operative functional measures will predict one year and two year functional ability.

Methods: One hundred fifty-five persons who underwent unilateral total knee arthroplasty participated in the prospective longitudinal study. Functional evaluations were performed at initial outpatient physical therapy appointment, one year and two years after surgery. Evaluations consisted of measurements of height, weight, quadriceps strength, knee range of motion, Timed Up and Go test (TUG), stair climbing task (SCT) and Knee Outcome Score (KOS) questionnaire. Age, body mass index (BMI), pain scores, knee flexion range of motion, and quadriceps strength on the involved and uninvolved side were entered in order into separate hierarchical regressions to determine the predictive ability on TUG, SCT and KOS scores at one and two years. Differences in functional scores were also evaluated with an ANOVA with one repeated measure (time) to determine if functional scores significantly changed over time.

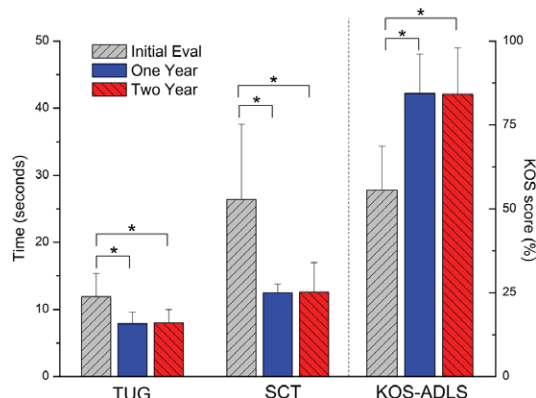


Figure 1

Results: Significant improvements were found for TUG, SCT and KOS scores between initial evaluation and one and two years ($p < 0.001$) (Figure 1). Weaker quadriceps strength on the non-operative limb was significantly related to worse scores on the TUG and SCT at one and two years, even after accounting for the influence of the other early post-operative measures in the regression ($p < 0.001$). Weaker quadriceps strength on the non-operated side was also related to lower KOS scores at one year ($p = 0.014$). Older subjects with higher body mass also had worse outcomes at one and two years. Post-operative measures were better predictors of TUG and SCT times than of KOS scores.

Conclusions: The current paradigm of physical therapy treatment after surgery may not be sufficient. Although function outcomes significantly improved at one and two years, significant relationships were found between variables not typically treated after TKA and functional outcomes. Treatment regimens after TKA should include exercises to improve the strength of the non-index limb in addition to the deficits imposed by the surgery. Emphasis on improving age-related impairments and reducing body mass may also improve long-term outcomes.

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RELIABILITY AND SENSITIVITY TO CHANGE OF THREE RADIOLOGICAL SCORING METHODS FOR THE ASSESSMENT OF HAND OSTEOARTHRITIS IN A MULTICENTER SETTING

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Purpose: Different radiological scoring methods exist to assess the presence and progression of structural damage, which are considered primary outcomes, in clinical research on hand osteoarthritis (OA). The choice of a preferred method should be based on clinimetric properties, particularly reliability and sensitivity to change. The present study compares the reliability and sensitivity to change of three recognised radiological scoring methods available for the assessment of the severity and progression of hand OA in a multicenter setting.

Methods: Baseline, 2-year and 6-year standardized hand radiographs of 90 hand OA patients (mean age 60.2 years, 78% women) were used. Hand OA was defined by the ACR criteria for clinical hand OA or the presence of structural abnormalities (multiple bony swellings/radiological OA). Radiographs from all time points were read simultaneously with known time sequence by three readers from different European centers using the OARSI atlas (OARSI), the Kellgren-Lawrence grading scale (KL), and the Verbruggen-Veys anatomical phase score (VV). All readers attended a training session, and standard rules and atlases were used to enhance consistency. Cross-sectional and longitudinal intra- and inter-reader reliability were determined using intraclass correlation coefficients (ICCs) derived from a two-way random model. For the assessment of intra-reader reliability a random sample of radiographs from 40 patients was rescored. In addition, the percentage of progression above the smallest detectable change (SDC) was calculated based on change scores for each reader. Kappa statistics were used to test if patients were consistently classified as having progressed or not progressed between readers. To evaluate sensitivity to change over 2 and 6 years, standardised response means (SRM) were calculated.

Results: Cross-sectional intra- and inter-reader ICCs were above 0.90 and 0.80, respectively, for all methods. Longitudinal intra-reader ICCs over 6 years ranged 0.21 to 0.83 for OARSI, 0.54 to 0.63 for KL and 0.52 to 0.78 for VV. Intra-reader ICCs over 2

years were lower for all methods. Inter-reader ICCs over 2 and 6 years, respectively, were 0.19 and 0.57 OARSI, 0.15 and 0.47 for KL, and 0.31 and 0.71 for VV. The percentage of patients with progression based on the SDC for each reader is shown in the table. Kappas for agreement on progression between readers after 2 years ranged from 0.26 to 0.38 for OARSI, 0.08 to 0.38 for KL and 0.12 to 0.50 for VV. After 6 years kappas ranged from 0.40 to 0.56 for OARSI, 0.37 to 0.53 for KL and 0.45 to 0.66 for VV. Sensitivity to change expressed by the SRM was moderate to large over both follow-up periods.

Intra-reader ICC, percentage progression and SRMs over 2-yr and 6-yr follow-up for OARSI, KL and VV

Method	Reader	2-yr		6-yr	
		Progression	SRM	Progression	SRM
OARSI	1	27%	0.56	48%	0.82
	2	23%	0.65	57%	1.08
	3	10%	0.73	34%	1.17
KL	1	19%	0.58	51%	1.10
	2	24%	0.82	57%	1.25
	3	12%	0.84	42%	1.33
VV	1	20%	0.45	30%	0.59
	2	11%	0.46	23%	0.62
	3	17%	0.92	36%	1.12

Conclusions: This multicenter study shows that cross-sectional reproducibility is high for all methods. However, longitudinal reproducibility is moderate for all three scoring methods, even if trained readers and methods to enhance consistency are used. Sensitivity to change was high, indicating that radiological changes can be detected over a two year period. More research on the clinimetric properties of radiological scoring methods for hand OA is needed to determine their value in clinical research.

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INFLAMMATORY CHARACTERISTICS ON ULTRASOUND PREDICT POORER LONG-TERM RESPONSE TO INTRAARTICULAR CORTICOSTEROID INJECTIONS IN KNEE OSTEOARTHRITIS

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Purpose: To assess whether inflammation on ultrasound is predictive of clinical response to intraarticular corticosteroid injections in patients with knee osteoarthritis (OA).

Methods: Patients with symptomatic knee OA were included in the study. Patients were randomized to receive either an intraarticular injection of 40mg of triamcinolone acetonide in the treatment group or 1cc of 0.9% saline in the placebo group. Clinical response was assessed by changes in baseline WOMAC scores and physician global assessment at 4 and 12 weeks. Ultrasounds were performed at each visit.

Results: 79 patients were enrolled into the study. Four-week data are available for 67 patients in the primary analysis. There was no change in the WOMAC pain subscale score from baseline to 4 weeks in the control group. There was a significant improvement in WOMAC pain subscale score from 10.8 (SD \pm 3.2) at baseline to 8.75 (SD \pm 4.0) at 4 weeks in the treatment group ($p < 0.001$). Of the 34 patients in the treatment group, 16 patients (47%) had inflammatory disease and 18 patients (53%) had non-inflammatory disease as determined by ultrasound. There was no difference in the change in WOMAC pain subscale score between the inflammatory and noninflammatory patients in the treatment group at 4 weeks. However, there was a statistically significant greater improvement in WOMAC pain subscale score among non-

inflammatory patients than among inflammatory patients at 12 weeks.

Conclusions: Intraarticular corticosteroid injections are an effective treatment for symptomatic knee OA compared to placebo. Patients with noninflammatory characteristics on ultrasound appeared to have more prolonged benefit from IA corticosteroids compared to inflammatory patients. This could be due to more aggressive baseline inflammatory disease activity superseding the benefit of corticosteroids over time. Further studies should be done to characterize the role of inflammation as a potential target for treatment in OA.

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BONE MARROW LESIONS IN PEOPLE WITH KNEE OSTEOARTHRITIS PREDICT PROGRESSION OF DISEASE AND JOINT REPLACEMENT

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Purpose: The presence of bone marrow lesions (BMLs) have been linked to pain and progression of disease in knee osteoarthritis (OA). This study aims to determine the relationship between bone marrow lesions (BMLs) and cartilage volume at baseline, cartilage volume loss over 2 years, and risk of knee joint replacement over 4 years, in subjects with knee OA.

Methods: One hundred and nine men and women with mild to moderate symptomatic knee OA were recruited to have MRIs performed at baseline and 2 years later to assess knee structure, including tibial cartilage volume and BMLs. They were contacted at 4 years to determine whether they had a knee replacement.

Results: BMLs were present in 66% of the subjects at baseline. BMLs was negatively associated with total tibial cartilage volume at baseline (B -129.19 ml; 95%CI -215.28, -43.09), as well as medial and lateral tibial cartilage volumes ($p < 0.001$ and $p = 0.004$ respectively). One hundred participants had a second MRI, approximately 2 years later. There were no significant differences between those who had a BML at follow up and those who did not. Subjects with a higher BML score at baseline had increased total tibial cartilage volume loss ($p = 0.01$) and are at greater risk of having a knee joint replacement over 4 years (OR 1.44; 95%CI 1.03, 2.02) than those without BMLs present.

Conclusions: In participants with symptomatic knee OA, the prevalence and severity of BMLs are associated with less total tibial cartilage and greater cartilage loss over 2 years. People with symptomatic knee OA with BML are more susceptible to requiring a knee joint replacement over 4 years. Our study suggests that it may be possible to use BMLs to detect those who are at higher risk of disease progression, which may enable early detection and better management of the disease to prevent progression and the subsequent need for surgery.

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CLINICAL PREDICTORS OF ELECTIVE TOTAL JOINT REPLACEMENT IN PERSONS WITH END STAGE KNEE OSTEOARTHRITIS

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Purpose: Arthritis is a leading cause of disability in the United States. Total knee arthroplasty (TKA) has become the gold stan-